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| APPLICATION NO.       | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------|-------------|----------------------|---------------------|------------------|
| 09/732,432            | 12/07/2000  | John A. Trezza       | SLM08-US            | 9943             |
| 24222                 | 7590        | 04/07/2004           | EXAMINER            |                  |
|                       |             |                      | SEDIGHIAN, REZA     |                  |
| MAINE & ASMUS         |             | ART UNIT             |                     | PAPER NUMBER     |
| 100 MAIN STREET       |             | 2633                 |                     | 11               |
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DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                             |                  |  |
|------------------------------|-----------------------------|------------------|--|
| <b>Office Action Summary</b> | Application No.             | Applicant(s)     |  |
|                              | 09/732,432                  | TREZZA, JOHN A.  |  |
|                              | Examiner<br>M. R. Sedighian | Art Unit<br>2633 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 20 January 2004.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 17-35 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 17-35 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 07 December 2000 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on 20 January 2004 is: a) approved b) disapproved by the Examiner.
 

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \*    c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

|  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ .                                   |

1. This communication is responsive to applicant's 1/20/2004 amendments in the application of Trezza, John A. et al. for "star topology network with fiber interconnect on chip" filed 12/7/2000. The amendments have been entered. Claims 17-35 are now pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 17-19, 21-23, and 25-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frigo (US Patent No: 5,521,734) in view of Arstein et al. (US Patent No: 5,208,693).

Regarding claims 17, 28, and 32, Frigo teaches a network device (col. 1, lines 20-25 and fig. 1A) for optical data communications (col. 1, lines 23-25), comprising: a central array (Central office 20 in fig. 1A) comprised of a plurality of central node transmitters ( $T_1 \dots T_N$ , fig. 1A) and a plurality of central node receivers ( $R_1 \dots R_N$ , fig. 1A), wherein the central array (there are a plurality of transmitters and receiver arrays such as  $T_1, R_1$  in the central office 20) is divided into at least one subarray (for example the array that is comprised of  $T_1, R_1$ ); at least one secondary node (Remote terminal 30 in fig. 1A) comprised of at least one dedicated secondary node receiver ( $R'$  in remote terminal 30 in fig. 1A) and a plurality of secondary node transmitters ( $T', T'_1, T'_N$ , in remote terminal 30 of fig. 1A), wherein each of the secondary node is coupled to each of the subarray (for example remote terminal 30 is coupled to subarray  $T_1, R_1$ ); a plurality of optical communication lines (25D, 25U, fig. 1A) coupling the central array and the secondary node (there are a plurality of fibers 25 that connect the central office 20 to remote terminals 30);

and a means for processing the optical data using a receiver (col. 1, lines 28-30), wherein each of the secondary node (for example remote terminal 30) receives the optical data only on the dedicated secondary node receiver (receiver R' in remote terminal 30 of fig. 1A). Frigo differs from the claimed invention in that Frigo does not disclose the means for processing optical data is a receiver reserved protocol. Arstein teaches a receiver reserved protocol (col. 2, lines 32-35). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a receiver reserved protocol such as the one disclosed by Arstein for the receiver in the remote terminal of Frigo in order to provide a protocol and a receiver that is capable of optimizing reception of data and that supports a wide dynamic range covering small signal levels. As to claims 28 and 32, Frigo further teaches a plurality of subarrays (for example subarray that is comprised of  $T_1$ ,  $R_1$ , or the subarray that is comprised of  $T_N$ ,  $R_N$ ) fabricated onto a substrate (note that such transmitters and receivers modules can be fabricated on a substrate) and coupled to electronic circuitry (the transmitters and receivers are connected to an electronic switch); and an ordered fiber array (the fiber array 25D, 25U in fig. 1A) that are coupled on a first end to the central array emitters and detectors (fibers 25D and 25U are connected at one end to the  $T_1$ ,  $R_1$  of central office 20), and at the second end, to the plurality of nodes (fibers 25D and 25U are connected at the other end to  $T'$ ,  $R'$  of remote terminal 30).

Regarding claim 18, Frigo further teaches at least one additional central array coupled to the central array and the secondary node (for example, an additional central array of  $T_N$ ,  $R_N$  that are connected to fibers 25D and 25U to another one of remote terminals 30).

Regarding claim 19, Frigo further teaches at least one secondary node coupled to the additional central array (for example, an additional remote terminal such as remote terminal 30 can be connected to central array by fibers 25D and 25U).

Regarding claim 21, Frigo further teaches the optical communication lines is an ordered fiber array (fiber array 25D, 25U of fig. 1A).

Regarding claim 22, Frigo further teaches the optical communication lines are coupled with a one-to-one correspondence between the central array and the secondary node (optical communication lines 25D and 25U are coupled with one-to-one correspondence between the central array transmitters and receivers to the remote terminal 30).

Regarding claim 23, Frigo further teaches the central node transmitters are vertical channel surface emitting lasers (col. 4, lines 41-45).

Regarding claim 25, Frigo further teaches the secondary node is a leaf node (col. 1, lines 40-44).

Regarding claim 26, Frigo further teaches each of the secondary node is a combination of at least one additional central array and at least one additional leaf node (col. 1, lines 40, 50, 64 ,note that there are a plurality of remote terminal 30s).

Regarding claim 27, Frigo further teaches a watch dog function for each of the secondary node (col. 7, lines 15-32).

Regarding claim 29, Frigo further teaches the topology is configured in a linear bus network and switched fabric (col. 1, lines 21-34).

Regarding claim 30, Frigo further teaches an optical interconnect coupling (25D, 25U, fig. 1A).

Regarding claim 31, Frigo further teaches one of the nodes comprises a processing unit (col. 7, lines 25-26).

Regarding claim 33, Frigo further teaches a multi-bit bus (the bus that connects receivers  $R_1'$  and  $R_N'$  to the switch and to the fibers).

Regarding claim 34, Frigo further teaches an arbitration scheme (col. 2, lines 50-62).

Regarding claim 35, Frigo further teaches the fiber optic bundles at the second end are relocatable to another node (for example fiber bundles 25D and 25U can be connected to another remote terminal 30).

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frigo (US Patent No: 5,521,734) in view of Arstein et al. (US Patent No: 5,208,693) and in further view of Cheng (US Patent No: 5,189,671).

Regarding claim 20, the modified optical communication system of Frigo and Arstein differs from the claimed invention in that Frigo and Arstein do not disclose the optical data includes minimal header information. Cheng discloses a central node (14, fig. 1) that sends header information (col. 5, lines 64-68, col. 6, lines 14-25) to a plurality of remote terminals (20-1, 20-2, fig. 1). As it is taught by Cheng, therefore, it would have been obvious to an artisan at the time of invention to transmit header information from a central node, such as central office 20 to remote terminals 30, in the modified optical data transmission system of Frigo and Arstein to provide proper routing for the transmission of information signals.

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frigo (US Patent No: 5,521,734) in view of Arstein et al. (US Patent No: 5,208,693) and in further view of Brown (US Patent No: 6,523,177).

Regarding claim 24, the modified optical communication system of Frigo and Arstein differs from the claimed invention in that Frigo and Arstein do not disclose a central array processor on the central array with a first-in-first-out (FIFO) buffer. Frigo teaches the central office include means for performing an operation system task of network monitoring (col. 8, lines 23-27). Brown teaches an optical bi-directional transmission system between a central node (105, fig. 1) and remote terminals (125, fig. 1), wherein a headend or hub processes the received signals (col. 1, lines 34-37, 50-52). Therefore, it would have been obvious to an artisan at the time of invention that central office such as the one of Frigo can have a processor with a FIFO buffer in order to process the received signal or to perform network monitoring and system tasks.

6. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

*M. R. Sedl*  
M.R. SEDIGHIAN  
Patent Examiner  
Art Unit : 2633